

1 “purchasing incrementally to upgrade and expand its switch network, on a
2 forward-looking basis”.⁵⁴ Verizon claims it is using forward-looking
3 assumptions, but fails to consider the long-run when calculating its costs.⁵⁵

4 **Q. HOW DID VERIZON DETERMINE ITS SWITCH DISCOUNT INPUTS**
5 **IN THIS CASE?**

6 A. Verizon studied actual Lucent and Siemens equipment purchases for one year and
7 compared the list price with the net price to determine its growth discount
8 inputs.⁵⁶ Even if it were correct to use growth prices in a TELRIC study, which it
9 is not, Verizon’s claim that one year’s worth of purchases could accurately reflect
10 the type and amounts of switch equipment purchases it expects to make in the
11 future is incorrect.

12 Indeed, Verizon has admitted that the purchase information it used to
13 develop the discounts is not appropriate for determining the price of a new
14 switch.⁵⁷

15 **Q. DOES VERIZON’S APPROACH CORRECTLY CALCULATE TELRIC**
16 **BASED COSTS?**

17 A. No. Verizon is assuming the discounted price structure of incrementally growing
18 its existing switches, not the discounted price structure for newly constructed

⁵⁴ *Id.* at 188-189

⁵⁵ A glaring omission of references to the long-run is evident in the Cost Panel Testimony at 188-189.

⁵⁶ Panel Testimony at 190-193

1 switches that can serve the entire demand. It combines a short-run approach to
2 prices (which are higher than long-run new switch prices) with a long-run
3 approach of including the total cost of the switch (which is higher than the short-
4 run incremental cost of including just the growth equipment), thereby selectively
5 mixing methodologies and inappropriately inflating UNE costs. Verizon's mixed
6 approach directly violates the FCC's rules requiring prices based on the cost of a
7 reconstructed network that will serve the entire quantity of the network element
8 provided.

9 **Q. CAN SCIS BE USED TO PRODUCE A CORRECT SWITCH PRICE**
10 **USING ONLY GROWTH DISCOUNTS?**

11 A. No. SCIS is a "static" model and is designed to estimate the price of a new
12 switch.⁵⁸ SCIS was not designed to model dynamically a switch that grows over
13 time.⁵⁹ Verizon's input of only growth discounts is a misuse of the SCIS model.
14 A significant portion of the SCIS-derived price for a switch is for the "getting

⁵⁷ Verizon responses to AT&T Data Requests 9-33, 34 and 35 state that the existing contracts that were used to develop the Verizon discounts "would not control the price of a new switch" and they "cover only additions to existing switches."

⁵⁸ A Telcordia letter, dated July 30, 2001 to Mr. Bob Beyer in Verizon's Boston, MA, office, discussing SCIS explicitly states: "These prices reflect the cost to purchase a *new* 5ESS switching system." The letter was provided by Verizon in discovery as an attachment to Verizon Response to ATT Data Request 9-2 (emphasis added).

⁵⁹ Performing a dynamic cost study is extremely difficult, requires extensive demand analysis, and has not been used, to our knowledge, in the telephone industry for determining the costs of retail services or wholesale elements. SCIS was designed and developed, along with all other engineering economic cost models of which I am aware, to perform a "static" analysis.

1 started” equipment, or first cost of the switch.⁶⁰ This equipment is purchased with
2 the initial installation and would receive a new switch discount. In addition, all
3 lines and trunks purchased at the initial installation of a new switch (and usually
4 lines and trunks purchased for a number of years afterward) would also receive
5 the new switch discount.⁶¹

6 Verizon improperly used the growth switch discount in running the SCIS
7 model, and the model applied that discount uniformly across all switch
8 components, including the large “getting started” cost and all the lines and trunks
9 purchased as part of a new switch. This results in a serious overstatement of the
10 total switch investment. It is incorrect to enter the “growth” discount into SCIS
11 when the program will ultimately apply that lower growth discount to equipment
12 that Telcordia itself states is intended to model a new switch purchase with a
13 higher new switch discount.

14 **Q. HAS A COURT ADDRESSED THIS ISSUE?**

15 A. Yes, last year, the United States District Court for the District of Delaware
16 explicitly rejected as contrary to TELRIC Verizon’s no new digital switch
17 argument and its attempt to avoid larger new switch purchase discounts.⁶²

⁶⁰ **[BEGIN VERIZON PROPRIETARY] *** [END VERIZON PROPRIETARY]**

⁶¹ Most new switches are replacing an existing switch that was already serving the wire center. In such a case, all replacement lines and trunks purchased as part of the new switch would receive the new switch discount.

⁶² *Bell Atlantic-Delaware, Inc. v. McMahon*, 80 F. Supp. 2d 218, 236-239 (D. Del. 2000).

1 **Q. WHAT NEW SWITCH PRICE SHOULD VERIZON USE?**

2 A. The cost study should be long-run. The cost of a *new* digital switch is an
3 appropriate estimate for the next generation of switch technology and should be
4 used in the cost study.

5 **Q. WOULDN'T PACKET SWITCHES BE EVEN MORE EFFICIENT?**

6 A. No. At some future date, packet-based switches will probably be the primary
7 switching vehicle in the network, but at present, it is premature to assume a
8 network using packet technology for voice transmission. Efficient companies will
9 replace digital switches with packet switches only when they are at least
10 functionally equivalent and cheaper on a unit basis than purchasing or growing
11 digital switches.

12 **Q. HOW SHOULD THE PRICE FOR A NEW SWITCH BE DETERMINED?**

13 A. There are two primary sources for identifying the cost of a new switch:
14 competitive bids and switch manufacturer contracts.⁶³ Verizon states that the
15 purchasing unit of Verizon Communications, Inc. uses a competitive bid
16 procedure for the purchase of new switches. The fact that Verizon uses
17 competitive bidding procedures to purchase new switches, however, does not
18 necessarily mean the contract prices are not available – only that the contract

⁶³ The switch manufacturers typically maintain long-term baseline contracts that include terms, conditions and prices for switch purchases with their customers. These contracts are often updated via amendments, etc. to reflect special short-term conditions, such as special negotiations on high-volume growth equipment, for example. When referring to
(footnote continued)

1 prices would be the maximum price that Verizon would pay for a new switch.

2 AT&T/WorldCom's restated rates are based on information provided by Verizon
3 regarding its available discounts for replacing or purchasing a new digital
4 switch.⁶⁴ The relevant information is provided in Attachment 3

5 **C. IDLC**

6 **Q. WHAT IS IDLC AND WHAT IS ITS IMPACT ON UNE SWITCH**
7 **PRICES?**

8 A. Subscribers' lines are copper loops. Cooper loops can either be connected directly
9 to the switch at analog ports, or, using digital loop carrier ("DLC") technology, be
10 aggregated at a remote terminal and brought to the wire center on fiber feeder. In
11 the latter scenario, the fiber feeder in the wire center is then typically converted to
12 copper DS1s and brought directly into the switch.

13 TR-008, a particular type of IDLC, has been deployed in telephone
14 networks for many years. This older technology used small-sized remote
15 terminals and had limited capability to engineer and concentrate subscriber traffic.
16 Verizon continues to rely on TR-008 in its cost study.

17 The newer IDLC technology is called GR-303 (formerly TR303) and is
18 often called Next Generation Integrated Digital Loop Carrier (NGDLC). This
19 technology can concentrate more traffic on fewer DS1s. The number of DS1s

contracts in this testimony, we are referring to these baseline contracts and their
amendments, even though a competitive bid may also result in a "contract."

⁶⁴ Verizon provided this information in the New Jersey BPU Docket No. TO00060356 in
response to AT&T Requests AT&T 13, 16, and 74.

1 from the remote terminal to the switch is engineered based on the number of
2 subscriber lines served by the remote terminal and the amount of usage at the
3 remote terminal. As set forth in this Panel's testimony on IDLC, a 4:1 line
4 concentration ratio is appropriate for GR-303, meaning four subscriber lines can
5 share one DS0 channel on the DS1. This would allow 96 subscriber lines to be
6 provisioned on one DS1.⁶⁵ This is the most efficient and cost effective technology
7 available today.

8 Proper modeling and appropriate engineering data inputs for IDLC are
9 important in determining correct switch port prices. Verizon has used
10 inappropriate model assumptions and inputs in determining costs for IDLC.

11 **Q. HOW MUCH IDLC HAS VERIZON ASSUMED IN ITS SWITCH STUDY?**

12 A. Verizon has assumed that 10% of the lines are on GR-303 integrated digital loop
13 carrier and that 47.6% lines are on the old technology, TR-008 Mode I IDLC.⁶⁶

14 **Q. SHOULD VERIZON ASSUME ALL INTEGRATED DIGITAL LOOP**
15 **CARRIER IS GR-303?**

16 A. Yes. Verizon's own 1999 Network Planning Guidelines⁶⁷ acknowledge that GR-
17 303 is the successor to TR-008 and is the forward-looking technology that is
18 currently available and being deployed today. As already explained above, the

⁶⁵ This is calculated by taking 24 channels per DS1 times 4 subscribers per channel
(24 * 4 = 96).

⁶⁶ Verizon Panel Testimony at 183.

⁶⁷ Verizon's Network Planning Guidelines, April, 1999 was provided in response to AT&T
Data Request 9-52.

1 correct amount of GR-303 IDLC should be increased from 10% to 82%, and a 4:1
2 line concentration ratio should be assumed.

3 **Q. HOW DOES THE PERCENTAGE OF GR-303 IDLC AFFECT SWITCH**
4 **COSTS?**

5 A. GR-303 IDLC typically has a lower cost for ports than other types of line port
6 terminations at the switch because it is engineered to concentrate traffic and is
7 brought into the switch at DS1 levels. Thus, Verizon's understatement of the
8 amount of GR-303 results in inflated switch costs.

9 **Q. ARE VERIZON'S SCIS DATA INPUTS FOR THE COST OF GR-303**
10 **INFLATED?**

11 A. Yes. In addition to understating the percentage of GR-303 in a reconstructed
12 network, Verizon overstates the cost of GR-303. If the SCIS input data do not
13 optimize the engineering characteristics of the equipment, SCIS will compute an
14 inefficient GR-303 IDLC arrangement, and the cost results will be inflated. This
15 has occurred in Verizon's cost study, as Verizon entered usage on GR-303 lines
16 that is unreasonably high and should be reduced by 30%.⁶⁸

17 **D. VERIZON'S PORT UTILIZATIONS CAUSE INFLATED**
18 **SWITCH PORT UNE PRICES**

19 **Q. HOW HAS VERIZON USED PORT UTILIZATIONS?**

20 A. Verizon calculates port costs based on data in SCIS. Verizon enters fill factors
21 directly into SCIS, and SCIS inflates the cost based on Verizon's fill factor inputs.

⁶⁸ The IDLC modifications are not reflected in the restated rates.

1 In addition, SCIS automatically computes “breakage,” which recognizes that the
2 last units of components with large capacities will, on average, not be fully
3 utilized. SCIS, therefore, increases the cost of each port by the fill factor entered
4 by Verizon and the “breakage” calculated by SCIS.

5 Verizon subsequently makes outboard adjustments⁶⁹ to Verizon’s VCOST
6 model that further reduce utilization and thereby inflate all the line and trunk port
7 costs. Verizon characterizes the adjustments as required to reflect “actual”
8 utilizations. But Verizon has already accounted for utilization by using the SCIS
9 utilization data.

10 **Q. IS VERIZON’S USE OF “ACTUAL” UTILIZATIONS CORRECT IN A**
11 **TELRIC STUDY?**

12 A. No. Verizon’s current levels of utilization reflect embedded practices that are not
13 relevant in a forward-looking TELRIC study.

14 **Q. WHAT SHOULD BE USED AS UTILIZATIONS IN A FORWARD-**
15 **LOOKING STUDY?**

16 A. The Verizon fill factors entered into SCIS and the “breakage” calculated by SCIS
17 are sufficient and reasonable. Thus, the utilization inputs in V-Cost should be set
18 to 1.0.⁷⁰

⁶⁹ These adjustments can be seen in the Supporting Documentation Section 5 of Verizon’s port cost studies. These utilizations can also be seen in the Inputs section labeled as Line Utilization Adjustment, Analog Utilization Adjustment, etc.

⁷⁰ AT&T/WorldCom’s restated rates have used these port inputs for a different purpose that will be explained later in this testimony. Thus, when looking at the V-Cost inputs for utilizations in the Restated cost study filing, these numbers will not be 1.0.

1 **E. FEATURE PORT ADDITIVES ARE INCORRECT**

2 **Q. WHAT TYPES OF EQUIPMENT ARE INCLUDED IN VERIZON'S**
3 **CLAIMED FEATURE PORT ADDITIVES?**

4 A. According to Verizon, these claimed costs represent hardware that must be
5 purchased to provision features.⁷¹

6 **Q. HOW DOES VERIZON COMPUTE THE CLAIMED COST OF THIS**
7 **EQUIPMENT?**

8 A. Verizon says it used the feature module (SCIS/IN) of the SCIS program to
9 calculate most of these costs.

10 **Q. HOW DOES THE DISCOUNT INPUT DISCUSSION ABOVE AFFECT**
11 **THE FEATURE MODULE OF SCIS?**

12 A. Like the SCIS/MO module used to calculate switch investment, the SCIS/IN
13 program requires discount inputs to be entered so that net prices for feature-
14 related hardware can be correctly calculated. Verizon's claimed feature
15 investments suffer from the same failure to use the appropriate new switch
16 discount as did Verizon's switch investment. As a result, Verizon's feature
17 investments have been overstated due to inappropriate discount inputs.

⁷¹ Feature hardware includes conference circuits and special announcements used only for features.

1 **Q. WHAT CORRECTIONS NEED TO BE MADE TO VERIZON'S FEATURE**
2 **PORT ADDITIVES?**

3 A. The SCIS/IN-produced investments for feature hardware must be recalculated to
4 reflect the same AT&T/WorldCom proposed new switch discount inputs as were
5 used in the AT&T/WorldCom recalculation of the SCIS/MO model.

6 **Q. WILL THE FEATURE COSTS BE CORRECT IF THE APPROPRIATE**
7 **DISCOUNTS ARE USED?**

8 A. No. Verizon has made additional SCIS/IN input errors relating to features. A
9 number of features rely on screen list editing, which screens telephone numbers.⁷²
10 The cost of these features depends on the number of lines per office that use
11 screen list editing. This input value should not vary from feature to feature
12 because it reflects the number of lines in the office that have at least one feature
13 that uses screen list editing. Nevertheless, in its cost studies in this case,
14 Verizon's inputs on this point vary dramatically.⁷³

15 It is not possible to discern whether there are additional input errors in
16 Verizon's calculation of feature costs because Verizon has not made any data

⁷² Screen list editing lines are lines that have one or more features that allow them to build a list of telephone numbers for screening of incoming calls. SCIS/IN uses this input to allocate the cost of switch equipment across all lines in the switch sharing the equipment used in any feature that uses screening. The affected features include Distinctive Ringing/Call Waiting, Selective Call Rejection, Selective Call Forwarding, Selective Call Acceptance for Centrex lines and Individual Lines as well as the Selective Call Rejection for ISDN lines

⁷³ See Verizon's "Unbundled Switch Ports and Features, Subsection #3.4 SCIS/IN Ftr Inputs".

1 available for review regarding these inputs, nor has it provided explanations of
2 how the inputs were developed.⁷⁴

3 **Q. HOW DO YOU PROPOSE TO CORRECT THESE ERRORS?**

4 A. Verizon has not provided the information necessary to support its costs for
5 features,⁷⁵ and therefore, it would be appropriate to eliminate the port additives
6 entirely. If, however, the Commission declines to take that step, then at a
7 minimum the discount inputs and the inconsistent set of inputs for the number of
8 screen list editing lines per office must be corrected.⁷⁶ AT&T/WorldCom's
9 restated rates in Attachment 1 to this testimony reflect these corrections.

⁷⁴ In AT&T Data Request Number 9, Request 26, AT&T asked Verizon to explain the rationale and assumptions for inputs to SCIS/IN and to provide documentation for the inputs. Verizon's response refers to its response to AT&T Data Request Number 9, Request 15 that states the data were collected from product managers in 1997. No documentation or other explanations are offered. Verizon also refers in its response to ATT Data Request Number 9, Request 21, which points to the lists of inputs it used, but again, without explanation or supporting documentation.

⁷⁵ Based on the limited information received to date, AT&T/WorldCom cannot correct the inputs (other than the screen list inputs); however, should additional data be made available by Verizon, supplemental testimony may be required regarding feature inputs.

⁷⁶ The correct "lines sharing screening" input for all of the screening features would be the largest number of lines that Verizon entered as an input.

**F. VERIZON MISIDENTIFIED COST CAUSATION AND THEREFORE
HAS MISASSIGNED COSTS TO ITS VARIOUS SWITCH RATE
ELEMENTS**

**Q. WHAT ARE THE CAPACITY RESTRAINTS ON MODERN DIGITAL
SWITCHES?**

A. As Ms. Pitts stated in her Direct Testimony, digital switches are port-limited, and are not constrained by peak period usage.⁷⁷ Indeed, Verizon studies show that the average processor utilizations are infinitesimally small compared to the available call processing capacities (not total capacity – only the vendor-stated call processing capacity).⁷⁸ This level of small utilization is typical of the current generation of digital switches – they are designed to take advantage of the huge economies in computer chip technologies to ensure that a switch will not exhaust on processing or memory power. Verizon studies show that its switches will never exhaust its call processing capacities in their lifetimes.⁷⁹

Verizon implicitly acknowledges this fact when it asserts that usage for reciprocal compensation does not affect the processing capacities of a switch.⁸⁰

⁷⁷ See the following. VZ-MA: J. Gansert's testimony, New York Case 95-C-0657, 94-C-0095, 91-C-1174, page 24. SWBT: Transcript (pg 3556) of Costing Pricing Issues SWBT Arbitration PUC Docket 16226, 11/3/96 cross of Raley. Ameritech: Direct Testimony of William Palmer, ICC Docket 96-0486, Ameritech-Illinois Exhibit 3.3. Pacific Bell: R. Scholl February, 1997, deposition in case R.93-04-993 and I.93-04-002.

⁷⁸ See Attachment 4, filed herewith, which displays the average switch processor utilizations contained in the SCIS model as run by Verizon.

⁷⁹ Id. (showing Verizon's SCIS inputs for [1] years to processor exhaust and [2] years to replacement).

⁸⁰ Panel Testimony at footnote 7.

1 The appropriate cost driver for today's digital switches is ports, not peak period
2 usage.

3 **Q. HOW DOES THE FACT THAT PROCESSING CAPABILITY OF**
4 **MODERN DIGITAL SWITCHES IS NOT A CONSTRAINT AFFECT**
5 **VERIZON'S COST STUDY?**

6 A. Verizon has improperly allocated the substantial processor, memory and other
7 "getting started" costs to the minute-of-use element of its switch rates. These
8 "getting started" costs do not vary with respect to lines or trunks. The line and
9 traffic inputs to SCIS can be modified by an order of magnitude, but the "getting
10 started" cost will not change even one penny.⁸¹

11 The only time the "getting started" cost will be replicated is when a second
12 switch must be installed because the port capacity was reached. Therefore, the
13 cost driver is ports. The "getting started" costs should be assigned to the ports,
14 not the minute-of-use.

15 Just as it is imperative to ensure that non-recurring costs be recovered via
16 non-recurring cost elements, it is critical that non-traffic sensitive costs not be
17 recovered via traffic sensitive elements.

⁸¹ This can be seen by viewing the office-by-office results in Verizon's SCIS database. The "getting started" cost of a switch does not change, except when remote switches are added to a host switch, because the remote's "getting started" costs are added to the host's "getting started" cost.

1 **Q. HOW DO YOU PROPOSE TO ASSIGN COSTS TO THE TRAFFIC**
2 **SENSITIVE AND NON-TRAFFIC SENSITIVE COST CATEGORIES?**

3 A. Verizon has included the SCIS outputs by detailed cost category on Page 2 in
4 Subsection 5.9 in the Switching MOU cost study. These cost categories must be
5 assigned to the appropriate element. In making these determinations, an
6 engineering analysis helps understand the functions and capacities of the
7 equipment whose costs are being assigned, and an economic analysis helps ensure
8 conformance to long-run, forward-looking cost methodology that assigns costs
9 based on economic cost causation.

10 Some categories are obvious: Line Termination costs (analog and IDLC),
11 BRI and PRI costs (for ISDN line and trunks, respectively), and other ISDN-
12 related port costs are unequivocally assigned to ports.

13 **Q. WHAT ARE THE “EPHC” CATEGORIES AND WHERE DO THEY**
14 **BELONG?**

15 A. There are four EPHC categories in the 5ESS switch SCIS/MO outputs (two in the
16 non-ISDN investments and two in the ISDN investments) that also should be
17 assigned to ports and non-traffic sensitive costs. EPHC is an output category that
18 captures the common equipment in the switch module, which is the primary
19 building block component of the 5ESS switch’s distributed architecture. This
20 common equipment’s maximum port capacity is always reached before its call

1 processing capacity.⁸² Therefore, the cost driver is ports, and the EPHC costs
2 should be assigned to the ports.⁸³

3 **Q. WHAT SCIS COST OUTPUT CATEGORIES SHOULD BE ASSIGNED**
4 **TO THE PEAK PERIOD USAGE CATEGORIES?**

5 A. The Line CCS categories (ISDN and non-ISDN), the D Channel Access PPS, PPB
6 Channel Access PPS, and Inter-Switch PPS⁸⁴ and SS7 link costs should all be
7 assigned to the traffic sensitive category, because this equipment is engineered
8 and purchased based on peak period usage.⁸⁵

9 The trunk costs are separated and assigned to the common trunk MOU,
10 which is also peak period usage sensitive.⁸⁶

⁸² This can be seen in the Line Termination output reports from SCIS that will always show "Excess SM EPHC Capacity Inv." (subcategory of the "Part C" costs in the Line Termination Investment) assigned to every port because the port capacity of the switch module was reached before the usage capacities could be completely utilized. These excess capacity categories are labeled 'Part C' of the Line termination costs.

⁸³ AT&T/WorldCom's restated switch cost study has computed a port additive factor to assign the getting started and EPHC costs to the ports. The factor development can be seen in the Restated Workpapers, Section #5.9 EO Material Investment. The factor is then entered into V-Cost, using Verizon's port utilization inputs. This was done to avoid having to make algorithm changes to V-Cost.

⁸⁴ These categories reflect equipment engineered based on either voice busy hour minutes of use or ISDN data busy second packet usage.

⁸⁵ Please refer to Ms. Murray's Direct Testimony regarding the difficulties of developing pricing structures for peak period costs.

⁸⁶ Note that Verizon's analysis initially and temporarily assigns trunk ports to the non-usage costs in the cost study (see Subsection #5.9, page 2) to isolate the local switch usage costs to develop the switch MOU rate element. The trunk costs are subsequently isolated from the non-usage category and assigned appropriately in the Digital Trunk Port development that is then used to calculate the common trunk MOU cost.

1 **Q. HOW MUCH OF THE TOTAL SWITCH INVESTMENT IS TRAFFIC-**
2 **SENSITIVE?**

3 A. A very small percentage of the overall investment in current digital switch
4 technology is engineered based on peak period usage. The allocation of the SCIS
5 outputs to the traffic sensitive and non-traffic sensitive categories can be seen in
6 Attachment 5.⁸⁷

7 **Q. HOW DOES THIS RELATE TO THE MODIFIED SYNTHESIS MODEL**
8 **INPUT USED TO ALLOCATE SWITCH COSTS TO PORT AND MOU**
9 **RATE ELEMENTS WHEN THE FLAT-RATED PORT OPTION IS NOT**
10 **USED?**

11 A. The information in Attachment 5 described above can be used in the Modified
12 Synthesis Model to allocate switch costs to port and MOU rate elements.⁸⁸

13 **G. RIGHT-TO-USE FEES ARE UNSUBSTANTIATED AND SHOULD BE**
14 **REJECTED, AND THE RIGHT-TO-USE FEES ARE MISASSIGNED**
15 **TO THE USAGE SENSITIVE RATE ELEMENTS.**

16 **Q. HOW DID VERIZON DETERMINE THE COSTS OF RIGHT-TO-USE**
17 **(RTU) SOFTWARE?**

18 A. Verizon's right-to-use software cost is an allocation of an annualized software
19 expense for Verizon-East based on historical data for 1999 and 2000, plus
20 forecasts for 2001 and 2002.

⁸⁷ The percentage of Verizon's total switch investment that is peak period usage related, including trunks, is also identified in the Restated Workpapers Subsection 5.9 EO Material Inv. (electronic workpapers AT&T VA_Part C-8-1 Switch MOU Supp(1).xls.

⁸⁸ The 40% traffic sensitive input to the Synthesis Model referenced in Ms. Pitts' Direct Testimony was not implemented, and the FCC's default inputs were used. These estimates are superseded by the actual Verizon percentage data set forth in Attachment 5.

1 **Q. IS THE TOTAL FORECASTED RTU AMOUNT APPROPRIATE?**

2 A. It is difficult to determine if the RTU amount is appropriate, because Verizon did
3 not provide any supporting documentation for the high level estimates it used.

4 **Q. WHY DO YOU QUESTION THE VERIZON-EAST RTU FEE AMOUNTS?**

5 A. RTU fees can vary dramatically, as is illustrated by Verizon's own cost study
6 workpapers in this proceeding.⁸⁹ Verizon included 1999 data that appear to be
7 inconsistent with data from other years and much higher than its more recent
8 software expenditures and forecasts. The inclusion of this 1999 data seriously
9 inflated the annual estimate of costs. In the absence of Verizon's full explanation
10 of the significant spike in 1999 costs, those 1999 costs should be excluded from
11 the calculations.

12 **Q. SHOULD VERIZON'S CURRENT RTU EXPENDITURES BE USED TO**
13 **DETERMINE FORWARD-LOOKING RTU FEES IN A TELRIC STUDY?**

14 A. No. Verizon's embedded RTU expenditures can include software purchases
15 necessary to update older switches. As discussed previously, a TELRIC study
16 requires a completely new network to be built that would eliminate the need to
17 upgrade older generation switches that should not be reflected in a forward-
18 looking environment. A large spike in expenditures, such as Verizon's 1999
19 costs, could also be the result of a one-time only RTU purchase that provides

⁸⁹ See Verizon RTU Factor Study Part G-9, Sheet labeled "Workpaper 1_Pg1" showing expenditures for 1999 and 2000 and estimated expenditures for 2001 and 2002 in columns D-F. The 1999 expenditure is more than twice as high as any other year.

1 switch software functionality for the rest of the life of the switches, requiring a
2 longer time period to amortize than Verizon's assumption of four years.

3 **Q. WHAT CORRECTIONS DO YOU SUGGEST?**

4 A. The minimal amount of information provided by Verizon does not allow us to
5 make any in-depth review or recommendations.⁹⁰ If further information is
6 provided regarding these fees, AT&T/WorldCom may file Supplemental
7 Testimony. However, at a minimum, the RTU factor should be recalculated,
8 excluding the unusually high RTU fees in 1999. AT&T/WorldCom's restated
9 rates excluded the 1999 data and recomputed the RTU factor based on the three
10 other years of data provided by Verizon.⁹¹

11 **Q. HAS VERIZON ASSIGNED THE UNSUBSTANTIATED RTU COSTS TO**
12 **UNE RATES IN AN APPROPRIATE MANNER?**

13 A. No. Verizon has inappropriately assigned the RTU costs to the minute-of-use
14 UNE rate element when these costs should be assigned to the ports.

15 **Q. HOW DOES VERIZON INCUR RIGHT-TO-USE COSTS?**

16 A. Verizon typically pays RTU fees either on a per-switch or per port-basis, or as part
17 of a larger buy-out contract that could cover all of Verizon's switches.⁹² Buy-out

⁹⁰ See Verizon's response to AT&T's Data Request Number 9, Requests 7(c),(h),(i),(j).

⁹¹ Using three years of data is consistent with other areas of Verizon's study, such as the line growth data provided in response to AT&T Data Request 9-12. See Attachment 6 for the RTU factor recalculation.

⁹² Verizon confirmed that it negotiates fees for right-to-use licenses on a buyout basis in its response to AT&T Request Number 9, Request 44.

1 contracts allow an ILEC to purchase software for all (or sometimes a subset) of its
2 switches, rather than purchasing the software on a per-switch or per-line basis.
3 The implicit cost driver would be the total number of switches that the buy-out
4 covers.

5 **Q. ARE RTU FEES EVER PAID BASED ON MINUTES-OF-USE OR**
6 **CALLS?**

7 A. RTU fees are the same without regard to the number of calls or minutes of use of
8 a switch, and we have never seen RTU fees charged by the switch manufacturer
9 on a minute of use or call basis. Thus, even if Verizon could substantiate its
10 software costs, they should be allocated to the non-traffic sensitive switch port
11 rates, and not to the traffic sensitive minute-of-use rates.

12 **Q. WHY RECOVER RTU COSTS VIA THE PORTS?**

13 A. RTU costs are incurred primarily on a per-switch basis (or directly on a per-port
14 basis). Exhaustion of ports is the cost driver for the purchase of an additional
15 switch and the incurrence of additional RTU fees. Cost causation principles are
16 best served by allocating RTU fees to the ports in the same manner as the “getting
17 started” costs, and in the same manner that Verizon incurs its costs.

18 AT&T/WorldCom’s restated minute-of-use costs exclude the RTU fee and
19 assign a recomputed RTU fee to the port elements.⁹³

⁹³ The corrected Verizon RTU factor described above must be further recomputed because it is being applied to a different amount of switch investment (AT&T’s proposed non-traffic sensitive investment) than the amount in Verizon’s study. See Attachment 5 for this recomputation.

**H. SWITCH ENGINEERING AND INSTALLATION
FACTORS ARE OVERSTATED**

Q. WHAT IS THE SWITCH EF&I FACTOR?

A. The engineering, furnished and installed ("EF&I") factor is the loading factor used to add items such as vendor engineering, Verizon engineering, vendor installation and Verizon installation, and sales tax in order to convert the material-only cost of a switch to a fully installed cost.

Q. HOW DID VERIZON COMPUTE ITS EF&I FACTOR?

A. Verizon used Verizon-East region-wide embedded data from its Detailed Continuing Property Records (DCPR) to calculate its EF&I factor. The Verizon EF&I factor was derived by comparing the material cost of the equipment to the total installed cost of the equipment.

Q. DOES VERIZON'S CALCULATION PRODUCE A REASONABLE EF&I FACTOR?

A. No. Verizon's EF&I factor is unreasonably high.

Q. DOES VERIZON PROVIDE ANY JUSTIFICATION FOR ITS HIGH EF&I COSTS?

A. No. Verizon response to AT&T Data Request Number 9, Request 31 seeking detailed DCPR data supporting Verizon's claimed EF&I factor provided only a column called "installed investment" without any data that underlie the installation costs. The integrity of the DCPR data is in question given the FCC's December 1998, audit findings of Verizon's Continuing Property Records.

1 In the Massachusetts UNE proceeding, VZ-MA admitted that it always
2 performs its own engineering and installation and does not put such work out to
3 competitive bid.⁹⁴ As a result, marketplace competitive pressures that encourage
4 efficiencies are absent, and reliance on this data to calculate a forward-looking
5 TELRIC EF&I factor to be applied throughout the VZ-East region is inappropriate
6 unless Verizon demonstrates that the Verizon costs are competitive with the
7 marketplace. Verizon has not made this showing.⁹⁵

8 **Q. WHAT DO YOU PROPOSE IS THE REASONABLE FORWARD-**
9 **LOOKING VENDOR PORTION OF THE EF&I FACTOR?**

10 A. SCIS can compute the vendor engineering and installation portion of the
11 engineering and installation factor as it calculates both [1] material-only or [2]
12 vendor EF&I costs. AT&T/WorldCom used the EF&I data from the SCIS/MO
13 outputs to develop an appropriate vendor EF&I factor.⁹⁶

14 **Q. WHAT DOES AT&T/WORLDCOM PROPOSE AS A REASONABLE**
15 **FORWARD-LOOKING EF&I FACTOR TO BE USED AS THE INPUT TO**
16 **VCOST?**

17 A. Given the questions raised by Verizon's incomplete documentation and by the
18 FCC's audit of the underlying data that Verizon relies on to develop the EF&I

⁹⁴ See Verizon's response to AT&T's Request Number 3, Request 4 in the Massachusetts UNE proceeding DTE-01-20.

⁹⁵ EF&I Factors were provided by many companies in the FCC's 1992 Open Network Architecture filings. The average EF&I factor was 10%. In addition, an 8% EF&I factor was decided upon in the FCC's USF proceeding, see In the Matter of Federal-State Joint Board on Universal Service, CC Docket Nos. 96-45, 97-160, FCC 99-304 (rel. Nov. 2, 1999), at ¶307.

⁹⁶ See Attachment 2.

1 factor, use of an earlier Verizon factor is appropriate to determine the local
2 telephone company portion of the EF&I factor. Verizon used a .1080 factor in its
3 February 13, 1992 filing of additional cost information and workpapers in
4 response to the FCC's MOO DA 92-128 released January 31, 1992 (ONA Tariff
5 Order). AT&T/WorldCom used the EF&I data from the SCIS/MO outputs for the
6 vendor portion of the factor in conjunction with the Virginia sales tax and the
7 11% Verizon portion of the factor to develop a reasonable EF&I factor that is
8 approximately 60% of Verizon's claimed factor.

9 **I. RECIPROCAL COMPENSATION RATES SHOULD BE**
10 **CALCULATED USING UNE SWITCH RATES**

11 **Q. DOES VERIZON INCLUDE THE SAME SWITCHING COSTS IN THE**
12 **DEVELOPMENT OF RECIPROCAL COMPENSATION AND UNE**
13 **SWITCH RATES?**

14 A. In its response to data requests, Verizon admitted that the switch processing of
15 UNE traffic and reciprocal compensation traffic is the same.⁹⁷ Notwithstanding
16 this admission, Verizon has arbitrarily chosen not to include the substantial
17 "getting started" costs and RTU fees in the reciprocal compensation rates, even
18 though it included these same costs in its UNE usage rates.⁹⁸

⁹⁷ See Verizon's response to AT&T Data Request Number 9, Request 22: "On a strictly technical basis, the switch does not treat either type of terminating call differently. However, Verizon VA has allocated the costs differently."

⁹⁸ See Verizon's response to AT&T Data Request Number 9, Request 23.

1 **Q. HOW DOES VERIZON JUSTIFY ITS DECISION TO INCLUDE THESE**
2 **COSTS IN UNE SWITCH USAGE COSTS AND NOT IN RECIPROCAL**
3 **COMPENSATION COSTS?**

4 A. Verizon claims it is including only incremental costs of the *additional* traffic
5 associated with terminating other carriers' traffic. Verizon claims that reciprocal
6 compensation traffic does not cause a burden to processing capacity (or apparently
7 cause any increase to RTU fees), and as a result, Verizon excluded both "getting
8 started" costs and RTU fees from reciprocal compensation.⁹⁹

9 **Q. IS VERIZON'S EXPLANATION REASONABLE?**

10 A. No. The same argument that Verizon makes about reciprocal compensation also
11 applies to UNE traffic. Verizon is seeking to maximize its UNE revenues and
12 minimize the costs of reciprocal compensation that Verizon pays.

13 **Q. ARE THERE MODIFICATIONS YOU ARE RECOMMENDING TO**
14 **VERIZON'S STUDY THAT WILL VIRTUALLY ELIMINATE THIS**
15 **PROBLEM?**

16 A. Yes. As discussed above, the "getting started" cost of a switch and its RTU fee
17 should not be included in the traffic sensitive UNE elements but properly belong
18 in the non-traffic sensitive port elements. When this correction is made, the
19 argument about assignment of "getting started" costs and RTU fees to UNEs or
20 reciprocal compensation is moot because the costs are fully (and properly)
21 assigned to the ports.

⁹⁹ See Panel testimony at 204.

1 If, however, the Commission does not accept AT&T/WorldCom's
2 proposal to assign the "getting started" cost and the RTU fees to the ports, then
3 these costs must be fairly apportioned to all traffic, including reciprocal
4 compensation, and not just to UNE switch usage rates.¹⁰⁰

5 **J. SUMMARY AND CONCLUSION**

6 **Q. PLEASE SUMMARIZE THIS PORTION OF YOUR TESTIMONY**

7 A. Although severely limited by untimely responses and lack of data requested in
8 discovery, we have identified fundamental flaws in Verizon's switch cost study
9 that create severe overstatements in switch UNE elements. The flaws include use
10 of an incorrect short-run growth-only switch price for a long-run study, a flawed
11 methodology for developing discount inputs, understatement of port utilization
12 inputs, RTU fees and feature port additives based on questionable inputs (for
13 which Verizon has failed to provide appropriate supporting information), an EF&I
14 factor that is too high, misallocation of non-traffic sensitive port-related costs to
15 the local switch usage rate element, and use of inconsistent assumptions for UNE
16 and reciprocal compensation cost development.

17 **Q. PLEASE STATE YOUR CONCLUSIONS.**

18 A. Verizon's cost study is fatally flawed and should be rejected. If the Commission
19 does not accept the modified Synthesis Model sponsored by Mr. Pitkin and its
20 results as a foundation for switch UNE costs, then Verizon's study must be

¹⁰⁰ This correction needs to be made in both the end office switch and the tandem switch
(footnote continued)

1 corrected as described herein. AT&T/WorldCom's restated switch rates include
2 the corrections recommended in this testimony.

3 **V. TRANSPORT**

4 **A. INTRODUCTION AND PURPOSE OF TESTIMONY**

5 **Q. PLEASE DESCRIBE THE PURPOSE OF THIS PORTION OF THE**
6 **PANEL TESTIMONY AND PROVIDE A SUMMARY OF ITS**
7 **CONCLUSIONS.**

8 A. This testimony reviews Verizon's claimed interoffice transport and common (also
9 known as shared) transport costs as presented in Verizon's Direct Panel
10 Testimony. This testimony identifies and explains the errors that Verizon VA
11 made with regard to both and recalculates the interoffice transport and common
12 transport costs to correct these errors.

13 Verizon VA has significantly overstated its forward-looking economic
14 costs for dedicated interoffice transport and common transport. In particular,
15 Verizon VA made the following errors:

- 16 • For dedicated interoffice transport, Verizon VA made fundamental
17 methodological errors in its study. The most significant error is Verizon
18 VA's understatement of the capacity of the SONET rings used to provide
19 dedicated interoffice transport in its study, thereby significantly overstating
20 the costs for the circuits riding those SONET rings.

investments.